Lloyd's Register

Rules and Regulations for the Classification of Ships, July 2012

Notice No. 3

Effective Date of Latest Amendments:

See page 1

Issue date: November 2012

Lloyd’s Register is a trading name of Lloyd’s Register Group Limited and its subsidiaries. For further details please see http://www.lr.org/entities

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as ‘Lloyd's Register’. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

RULES AND REGULATIONS FOR THE CLASSIFICATION OF SHIPS, *July 2012*

Notice No. 3

This Notice contains amendments within the following Sections of the *Rules and Regulations for the Classification of Ships, July 2012*. The amendments are effective on the dates shown:

Part	***Chapter***	***Section***	***Effective date***
1	2	2	1 January 2013
1	3	1, 6, 15, 18	1 January 2013
3	2	2	Corrigenda
3	11	2, 6	1 January 2013
4	1	4	Corrigenda
5	21	1	1 January 2013
6	2	9	Corrigenda
8	2	1, 10, 12	1 January 2013
8	2	6	Corrigenda

It will be noted that the amendments also include corrigenda, which are effective from the date of this Notice.

The *Rules and Regulations for the Classification of Ships, July 2012* are to be read in conjunction with this Notice No. 3. The status of the Rules is now:

Rules for Ships	Effective date:	July 2012
Notice No. 1	Effective date:	1 July 2012
Notice No. 2	Effective date:	1 October 2012
Notice No. 3	Effective date:	1 January 2013 & Corrigenda

Part 1, Chapter 2
Classification Regulations

Effective date 1 January 2013

■ *Section 2*
Character of classification and class notations

2.1 Definitions

Table 2.2.1 Type notations
(*Part only shown*)

Dry cargo
Icebreaker Icebreaker(+)

2.8 Descriptive notes

(*Part only shown*)

2.8.3 Where LR's ShipRight procedures for the following have been applied on a voluntary basis, then a descriptive note will, at the Owner's request, be entered in column 6 of the *Register Book*, preceded by the word **ShipRight** (*see also ShipRight Procedures Overview,* Pt 3, Ch 16 and Pt 5, Ch 21):

MCBM	This descriptive note will be assigned where an Owner operates an approved Planned Maintenance Scheme based on the use of Condition-based Maintenance as part of the Continuous Survey Machinery (CSM) cycle. The descriptive note will indicate that procedures and documentation are in place to control and record the inspection and maintenance routines of all surveyable machinery and equipment. The Scheme is to be based on acceptable and applicable modes of failure analysis and risk assessment approved by LR. For the design and installation of machinery condition monitoring systems which form part of a Machinery Condition-based Maintenance scheme approved by LR for the assignment of the descriptive note, the requirements of Pt 5, Ch 21 are applicable.

Part 1, Chapter 3
Periodical Survey Requirements

Effective date 1 January 2013

■ *Section 1*
General

1.3 Unscheduled surveys

1.3.1 In the event that Lloyd's Register (hereinafter referred to as LR) has cause to believe that its Rules and Regulations are not being complied with, LR reserves the right to perform unscheduled surveys of the hull ~~or~~ and machinery ~~and~~ as well as the applicable statutory requirements whether or not the appropriate statutory certificate has been issued by LR.

1.5 Definitions

1.5.17 For the application of requirements outlined in Sections 2, 3, 4 and 5, a general dry cargo ship is a self-propelled ship of 500 gross tonnes or above, constructed generally with a 'tween deck and intended to carry solid cargoes~~. This excludes bulk carriers, refrigerated cargo ships, roll-on-roll-off ships, livestock carriers, deck/deck ships and ships dedicated for the carriage of containers, forest products (but not log or timber carriers), wood chips and cement.~~, other than:

- bulk carriers;
- ships dedicated to the carriage of containers;
- dedicated forest product carriers (but not timber or log carriers);
- roll on-roll off ships;
- refrigerated cargo ships;
- dedicated wood chip carriers;
- dedicated cement carriers;
- livestock carriers;
- dock/deck cargo ships;
- general dry cargo ships of double side-skin construction, with double side-skin extending for the entire length of the cargo area, and for the entire height of the cargo hold to the upper deck.

Section 6
Special Survey – Bulk carriers – Hull requirements

6.6 Close-up Survey

(*Part only shown*)

Table 3.6.2 Close-up Survey – Double skin bulk carriers (excluding ore carriers)

Special Survey II (Ships 10 years old)
~~(2) Forward and aft transverse bulkheads, including stiffening system, in a complete ballast tank, *see* Note 1~~
(2) Forward and aft transverse bulkheads, including stiffening system, in one complete double side ballast tank on one side of the ship (i.e. port or starboard), *see* Note 1

Section 15
Boilers

15.2 Scope of surveys

15.2.6 At the annual General Examination referred to in 15.1.1 the requirements of ~~2.2.11~~ 2.2.14 to 2.2.16 are to be complied with.

Section 18
Inert gas systems

18.1 Frequency of surveys

18.1.1 Inert gas systems installed on board ships intended for the carriage of oil or liquid chemicals in bulk are to be surveyed annually in accordance with the requirements of ~~2.2.27~~ 2.2.32. A Special Survey of the inert gas system, in accordance with the requirements of 18.2, is to be held at intervals not exceeding five years.

Part 3, Chapter 2
Materials

CORRIGENDUM

Section 2
Fracture control

2.1 Grades of steel

2.1.4 Design for normal worldwide service assumes the navigation to areas of minus 10°C, where the design air temperature is to be taken as the lowest mean daily average air temperature in the area of operation:

where

~~Mean = statistical mean over a minimum of 20 years (MDHT)~~
~~Average = average during one day and one night (MDAT)~~
~~Lowest = lowest during the year (MDLT)~~

Mean = statistical mean over a minimum of 20 years
Average = average during one day and one night
Lowest = lowest during the year
MDHT = Mean Daily High Temperature
MDAT = Mean Daily Average Temperature
MDLT = Mean Daily Low Temperature

Fig. 2.1.1 shows the definition graphically.

The material grade of exposed structure of ships intended to operate in external air temperatures below minus 10°C will be specially considered, *see also The Provisional Rules for the Winterisation of Ships*.

Part 3, Chapter 11

Closing Arrangements for Shell, Deck and Bulkheads

Effective date 1 January 2013

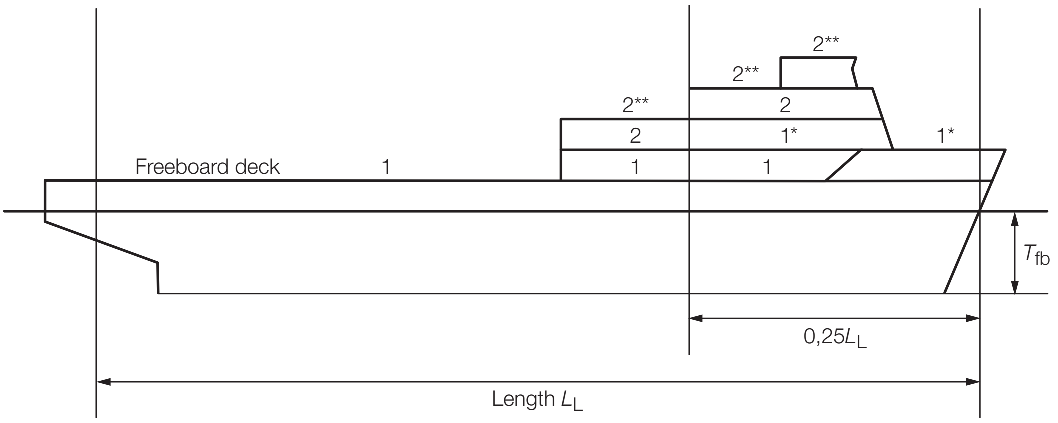
■ *Section 2* Steel hatch covers

2.3 Load model

2.3.2 The vertical weather design pressure, p_H, in kN/m^2, on the hatch cover panels is to be taken from Table 11.2.1. When cargo is carried on the cover, cargo loads according to 2.3.4, 2.3.5 and Pt 4, Ch 8,11.2 are to be considered. The vertical weather design load needs not to be combined with the cargo load. For 'tween deck hatch covers not exposed to weather load, the structural assessment is to be carried out using the cargo loads defined in 2.3.4 and 2.3.5. Covers carrying wheeled vehicles are also to comply with Ch 9,3 and where it is proposed to provide a helicopter landing area, covers are also to comply with Ch 9,5. Where an increased freeboard is assigned, the design load for hatch covers according to Table 11.2.1 on the actual freeboard deck may be as required for a superstructure deck, provided the summer freeboard is such that the resulting draught will not be greater than that corresponding to the minimum freeboard calculated from an assumed freeboard deck situated at a distance at least equal to the standard superstructure height h_N below the actual freeboard deck, *see* Fig. 11.2.2.

Table 11.2.1 Design pressure p_H of weather deck hatches (*part only shown*)

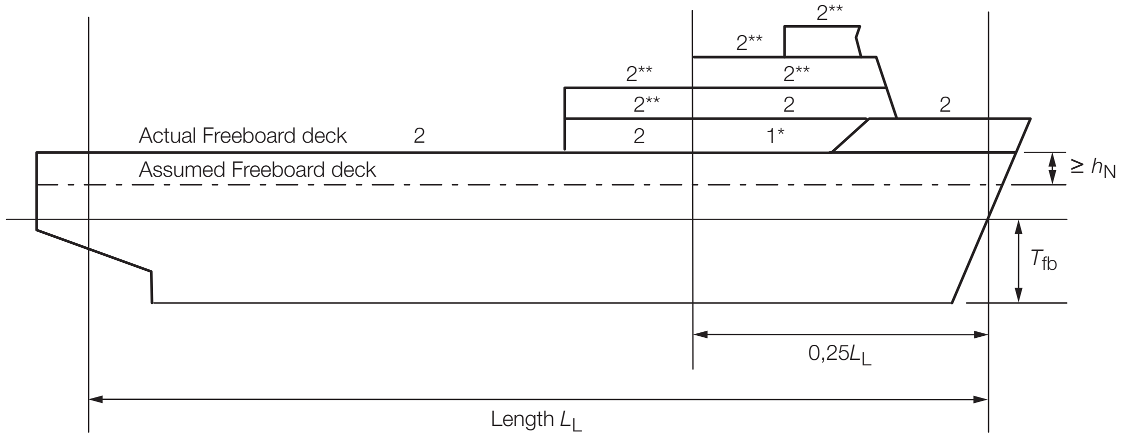
Position (*see* Note)	p_H, in kN/m^2
NOTE The positions 1 and 2 are illustrated for example ships in Fig. 11.2.1 and Fig. 11.2.2.	



* reduced load upon exposed superstructure decks located at least one standard height of superstructure above the freeboard deck

** reduced load upon exposed superstructure decks of vessels with L_L > 100 m located at least one superstructure standard height of superstructure above the lowest Position 2 deck

Fig. 11.2.1 Positions 1 and 2



* reduced load upon exposed superstructure decks located at least one standard height of superstructure above the freeboard deck

** reduced load upon exposed superstructure decks of vessels with L_L > 100 m located at least one superstructure standard height of superstructure above the lowest Position 2 deck

Fig. 11.2.2 Positions 1 and 2 for an increased freeboard

Existing Figs. 11.2.1 *to* 11.2.7 *have been renumbered* 11.2.3 *to* 11.2.9*.*

■ *Section 6*
Miscellaneous openings

6.1 Small hatchways on exposed decks

6.1.10 ~~Escape hatches are to be capable of being opened from either side.~~ To facilitate a swift and safe means of escape to the lifeboat and life raft embarkation deck, the following provisions apply to overhead hatches fitted along the escape routes addressed by SOLAS Reg. II-2/13:

(a) escape hatches and their securing devices shall be of a type which can be opened from both sides;
(b) the maximum force needed to open the hatch cover should not exceed 150 N; and
(c) the use of a spring equalising, counterbalance or other suitable device on the hinge side to reduce the force needed for opening is acceptable.

6.5 Side scuttles, windows and skylights

6.5.17 Windows in the shell ~~above Position 2~~, located at least one standard height of superstructure above the lowest Position 2 deck, are to be provided with strong portable internal storm covers for 25 per cent of each size of window, with means of securing being provided at each window.

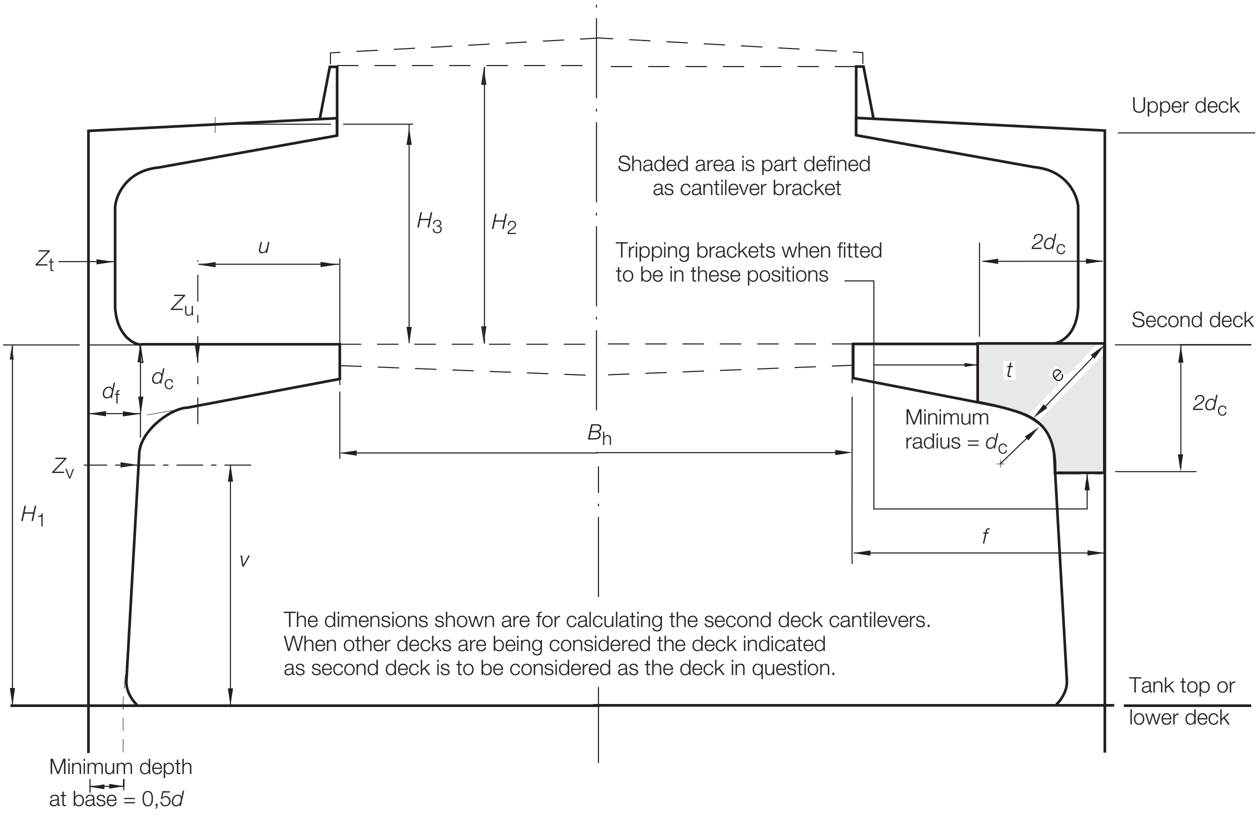
Part 4, Chapter 1

General Cargo Ships

CORRIGENDUM

■ *Section 4* Deck structure

4.4 Deck supporting structure


Shaded area is part defined as cantilever bracket

Tripping brackets when fitted to be in these positions

The dimensions shown are for calculating the second deck cantilevers. When other decks are being considered the deck indicated as second deck is to be considered as the deck in question.

Minimum depth at base = 0,5d

Fig. 1.4.2 Deck ~~conti-levers~~ cantilevers

Part 5, Chapter 21

Requirements for Condition Monitoring Systems – and Machinery Condition-Based Maintenance Systems

Effective date 1 January 2013

■ *Section 1*
Requirements for Condition Monitoring Systems and Machinery Condition-Based Maintenance Systems

1.1 Scope

(*Part only shown*)

1.1.1 The requirements of this Chapter are applicable to condition monitoring systems and machinery condition-based maintenance systems which:

1.1.4 The requirements of this Section are to be applied to machinery condition-based maintenance systems where the assignment of the **MCBM** Descriptive Note is requested in addition to the **MCM** Descriptive Note.

1.2 Plans and particulars

1.2.3 In addition to information required by 1.2.1, the documents listed in the *ShipRight Procedures for Machinery Planned Maintenance and Condition Monitoring* are to be submitted to LR for consideration where the **MCBM** Descriptive Note is requested.

Existing paragraphs 1.2.3 *and* 1.2.4 *have been renumbered* 1.2.4 *and* 1.2.5.

1.3 General requirements for condition monitoring systems

1.3.6 Portable condition monitoring equipment is to be maintained and calibrated in accordance with a recognised National or International Standard to ensure the accuracy of the readings obtained. The standard is to include the issue of calibration certificates by a recognised test house in accordance with a recognised National or International Standard for instrument calibration. Copies of calibration certificates are to be retained on board and referenced on all condition monitoring reports submitted as part of the onboard condition monitoring program. Portable equipment used in hazardous areas is to be of a safe type suitable for use in the appropriate hazardous zone.

1.3.7 Measuring points are to be clearly identified in the submission and proposals to ensure repeatability of measurements are to be included.

1.3.8 The condition monitoring equipment is, as far as is practicable, to be located and installed such that it is accessible for maintenance and survey.

1.3.9 The condition monitoring equipment is to be installed in accordance with the manufacturer's instructions, *see* the *Product Assessment and Test Specification (PACM)*, or by an approved technical organisation as defined in the LR *ShipRight Procedures for Machinery Planned Maintenance and Condition Monitoring*, and to the satisfaction of the LR Surveyor.

1.5 Requirements for systems providing machinery condition related information as part of machinery ~~planned maintenance scheme~~ condition-based maintenance systems

1.5.2 Where condition monitoring data is used as part of a machinery condition-based maintenance system, persons interpreting data and making diagnostic decisions are to be suitably competent, in accordance with ISO 18436 or an equivalent recognised National Standard. Evidence of competence, including training certificates of those providing analysis and data interpretation, are to be submitted and held on board. These certificates are to be made available to LR on request for audit and survey purposes.

Existing paragraphs 1.5.2 *and* 1.5.3 *have been renumbered* 1.5.3 *and* 1.5.4.

1.6 Requirements for machinery condition-based maintenance systems

1.6.1 Any vessel applying to operate a machinery condition-based maintenance system with the **MCBM** Descriptive Note is also to have an approved planned maintenance system in place with the **MPMS** Descriptive Note assigned.

1.6.2 Where a **MCBM** Descriptive Notation is requested and a vessel operates both an approved continuous machinery (CSM) survey cycle and has an approved machinery condition monitoring system in place which meets the requirements of the **MCM** Descriptive Notation, the **MCBM** Descriptive Notation is to be taken to mean that the vessel complies with the requirements of the **MCM** notation however, the **MCM** Descriptive Notation will not be assigned.

1.6.3 Proposals for machinery condition-based maintenance systems are to be submitted for approval and are to meet the requirements of LR's *ShipRight Procedures for Machinery Planned Maintenance and Condition Monitoring*, and be to the satisfaction of the LR Surveyor. This plan is to include proposals for returning the vessel to a conventional maintenance and survey regime, and withdrawal of the **MCBM** Descriptive Notation, if the Owner decides for any reason to withdraw from condition-based maintenance or if the vessel should change ownership and the new Owners do not wish to retain the **MCBM** Descriptive Note.

1.6.4 Machinery condition-based maintenance systems are to be developed in accordance with the methodology given in ISO 17359 or an equivalent recognised National Standard.

1.6.5 Proposals are to identify those items of machinery and equipment which are to be maintained according to their condition and those which are to be maintained in accordance with manufacturer's time-based and running hours-based service and maintenance requirements. To assess which items are to be maintained according to their condition, a criticality assessment is to be carried out.

1.6.6 The criticality assessment is to include a FMEA/FMECA assessment and is to take account of:

- machinery and equipment redundancy;
- failure rate and mean time to repair;
- local effects of failure on the safe operation of the machinery and equipment; and
- wider effects of failure on the ships essential services and the safe operation of the ship including environmental impact.

The criticality assessment is included in the submission for approval in accordance with LR's *ShipRight Procedures for Machinery Planned Maintenance and Condition Monitoring*, as stated in 1.6.3, and is to be to the satisfaction of the LR Surveyor.

1.6.7 Boilers and pressure vessels are not eligible for condition-based monitoring.

1.6.8 For all machinery and equipment which is proposed for maintenance based on condition monitoring data, in addition to the criticality assessment in 1.6.5, evidence is to be submitted which demonstrates that the condition of the machinery and equipment can be measured accurately and that the measured parameters are clearly defined in the condition monitoring plan.

1.6.9 Machinery condition monitoring is to meet the requirements of 1.3 and 1.5; in addition, the machinery condition-based maintenance plan is to include guidance on parameter limit values, trend analysis and fault diagnosis. This requirement for guidance information does not remove the requirement for those persons with responsibility for analysing condition monitoring data to be suitably trained and competent, in accordance with 1.5.2.

1.6.10 As part of the criticality assessment, it is to be demonstrated that any machinery included in the list of items for condition-based maintenance shall have measurable performance parameters which will give adequate warning of machinery deterioration that may result in failure, to allow maintenance to be scheduled in advance of such failure.

1.6.11 The condition-based maintenance plan is to maintain records of all data included in the plan approval document. The plan shall include proposals for:

- essential data describing the machine;
- essential data describing operating conditions;
- the measurement position;
- the measured quantity units and processing; and
- date and time information.

These records are to be available on request to any LR Surveyor or representative.

1.6.12 Proposals to ensure repeatability of results are to be submitted for approval.

1.6.13 Those items of machinery and equipment which are subject to a mandatory five-year survey are still required to be surveyed by a LR Surveyor at intervals not exceeding five years. A list of these items is to be found in LR's *ShipRight Procedures for Machinery Planned Maintenance and Condition Monitoring*.

1.6.14 For items which are not suitable for condition-based maintenance, *see* 1.6.7, the required maintenance will, as a minimum, comply with the equipment manufacturer's maintenance requirements.

1.6.15 The MCBM records, including diagnostic analysis and condition assessment reports, for items of machinery and equipment being maintained on the basis of condition monitoring data, are to be surveyed over a five-year continuous survey cycle, with 20 per cent of the records being subject to survey each year such that all records are surveyed over a 5 year period.

Part 6, Chapter 2

Electrical Engineering

Corrigendum

■ *Section 9*

Rotating machines

9.3 Temperature rise

Table 2.9.1 Limits of temperature rise of machines cooled by air (*part only shown*)

NOTES
1. Where water cooled heat exchangers are used in the machine cooling circuit the temperature rises are to be measured with respect to the temperature of the cooling water at the inlet to the heat exchanger and the temperature rises given in ~~Table 2.9.1~~ this Table shall be increased by 10°C provided the inlet water temperature does not exceed the values given in 1.9.
2. T = thermometer method
R = resistance method
ETD = embedded temperature detector
3. Temperature rise measurements are to use the resistance method whenever practicable.
4. The ETD method may only be used when the ETD's are located between coil sides in the slot.

Part 8, Chapter 2

Ice Operations – Ice Class

Effective date 1 January 2013

■ *Section 1*

Strengthening requirements for navigation in ice – Application of requirements

1.5 Icebreakers

1.5.1 Sea-going ships specially designed for ice-breaking duties will be assigned the ship type notation '**Icebreaker**' in addition to the special features notation appropriate to the degree of ice strengthening provided. 'Icebreaker' refers to any ship having an operational profile that includes escort or ice management functions, having powering and dimensions that allow it to undertake aggressive operations in ice-covered waters, and having a class certificate endorsed with this notation. The additional ship type notations may be assigned as follows:

Icebreaker	Refers to a ship having an operational profile that includes escort, research or support functions, having powering and dimensions that allow it to undertake aggressive operations in ice-covered waters, *see* 10.8.4.
Icebreaker(+)	Refers to a ship for which the powering and dimensions of the hull structure and propulsion machinery necessary to undertake the operational profile as determined by selection of a primary function have been assessed, *see* Section 12.

CORRIGENDA

■ *Section 6*

Hull requirements for first-year ice conditions – Ice Classes 1AS FS, 1A FS, 1B FS, 1C FS and 1D

6.3 Primary longitudinal members supporting transverse ice framing

(*Part only shown*)
6.3.1 The webs of primary longitudinal members supporting transverse ice frames are to be stiffened and connected to the main or intermediate frames so that the distance, *r*, between such stiffening is not to be greater than given according to the following formula:

$$r = \sqrt{\frac{291t^3}{\alpha_o \cancel{y^2} \gamma^2}} \text{ mm}$$

where

$\cancel{y}\ \gamma$ = (a) Forward region

$\cancel{y}\ \gamma = 0{,}653 + 3{,}217 \sqrt{P_0 \Delta} \times 10^{-5}$

$\cancel{y}\ \gamma = 0{,}876 + 9{,}908 \sqrt{P_0 \Delta} \times 10^{-6}$
or
$\cancel{y}\ \gamma = 1{,}0$, whichever is the least
= (b) Midship and aft regions
$\cancel{y}\ \gamma = 0{,}653 + 9{,}908 \sqrt{P_0 \Delta} \times 10^{-6}$
or
$\cancel{y}\ \gamma = 1{,}0$, whichever is the least
P_0 and Δ = are as defined in 2.2.

Effective date 1 January 2013

Section 10
Hull strengthening requirements for navigation in multi-year ice conditions – Ice Classes PC1, PC2, PC3, PC4, PC5, PC6 ~~and~~, PC7 and Icebreaker

10.8 Hull area factors

10.8.4 Area factors to be applied to ships assigned the notation **Icebreaker** are given in Table 2.10.4.

Table 2.10.4 Hull area factors (AF) for icebreaker

	Bi	B*I*i	B*II*	Blb	Mi	M*I*	Mb	Si	S*I*	Sb
PC1	1	0,90	0,70	0,55	0,70	0,50	0,30	0,94	0,56	0,35
PC2	1	0,85	0,65	0,50	0,65	0,45	0,30	0,88	0,50	0,30
PC3	1	0,85	0,65	0,45	0,55	0,40	0,25	0,81	0,44	0,30
PC4	1	0,85	0,65	0,45	0,55	0,40	0,25	0,81	0,44	0,30
PC5	1	0,85	0,65	0,45	0,55	0,40	0,25	0,81	0,44	0,30
PC6	1	1	0,65	0,45	0,55	0,40	0,25	0,81	0,44	0,30
PC7	1	1	0,65	0,45	0,55	0,40	0,25	0,81	0,44	0,30

Existing Tables 2.10.4 *to* 2.10.11 *to be renumbered Tables* 2.10.5 *to* 2.10.12.

Section 12
Requirements for Icebreaker(+)

12.1 Scope

12.1.1 Where the notation **Icebreaker(+)** is assigned, the arrangement, powering and dimensions of the hull structure and propulsion machinery are to be determined based on the operational profile selected that corresponds to that which the icebreaker is envisaged to undertake.

12.2 Operational profile

12.2.1 The operational profile(s) to be used for the basis of assignment of the notation **Icebreaker(+)**, as selected from 12.4, is to be provided and indicated on the midship sections.

12.2.2 Alternative operational profiles from the typical operational profiles, as given in 12.4, are to be determined in accordance with 12.6 and submitted.

12.2.3 The operational profile is only used to select a design basis. It is the responsibility of the Owner and/or Builder to select the appropriate operational profile of the icebreaker.

12.3 Information to be submitted

12.3.1 For assignment of the notation **Icebreaker(+)**, the operational profile information is to be submitted, which may include the following information where applicable:

(a) the level icebreaking capability, in terms of speed and ice thickness;
(b) the turning capability in level ice, in terms of diameter and ice thickness;
(c) the ramming capability, in terms of speed and ice condition; and
(d) an ice pressure plan that indicates the design ice pressure used for the determination of the hull structure.

12.3.2 The operational profile information and supporting documentation is to be placed onboard the ship.

12.4 Typical operational profiles

12.4.1 The typical operational profiles may be divided into three primary icebreaker functions and are described in Table 2.12.1 to allow the selection of the prescribed function type for hull and machinery strength requirements.

Table 2.12.1 Primary icebreaker functions

No.	Primary Function	General Description	Assumed criticality of operation
F1	Escort	Engaged in icebreaker fleet operations in ice, patrol and search/rescue missions. Breaking channel for supporting other ships, close manoeuvring, freeing of beset vessels and, where appropriate, towing vessels.	May attempt to follow easiest course when operating alone. Search and rescue operations are undertaken within the bounds of safe operation to the icebreaker and escorted ship.
F2	Research	Engaged in independent operations in ice, including deployment of scientists and research equipment. Breaking of channels to reach scientific/ research bases and escort of ships for re-supply purposes.	May re-route or re-schedule to avoid perceived difficult ice conditions.
F3	Support	Engaged in independent or icebreaker fleet operations in ice, supply/transit runs to support offshore installations. Ice management activities which may include breaking of ice floes and engagement in ice defence of offshore operations/installations.	May actively break large/strong ice features to defend the installation.

12.5 Hull strength

12.5.1 An ice pressure plan is to be submitted for the icebreaker functions to demonstrate the operational envelope criteria as specified in 12.3.1. The ice pressure is to consider the adjustment of area factors for additional ice interaction scenarios as well as the crushing failure class factors due to the increased impact speed as well as application with due cognisance to low displacements.

12.6 Propulsion power

12.6.1 Icebreakers are to be equipped with means of propulsion that meet the ice performance criteria. Ice model tests are be utilised to demonstrate the operational envelope criteria as specified in 12.3.1, as appropriate.

12.6.2 Propulsion system redundancy is to be considered. Where a machinery redundancy (**PMR**, **SMR** or **PSMR**) notation is to be assigned in addition to an **Icebreaker(+)** notation the requirements of Pt 5, Ch 22 of the Rules for Ships are to be complied with.

12.7 Alternative operational profiles

12.7.1 As an alternative to the typical operation profiles in 12.4.1, a scenario document, which is design specific, is required for applications where operational scenarios do not match the typical operational scenarios as given above and is to include details of the scenarios selected for deriving and applying ice loads.

12.7.2 The scenario document is to address the philosophies in the Rules and provide justification for deviation from the requirements in 12.4 and 12.5.

12.7.3 Typical operational profiles considered outside the scope of 12.4.1 include the following:

(a) pollution control icebreakers;
(b) patrol icebreakers;
(c) tug, harbour and fairway icebreakers; and
(d) icebreakers designed for specific local ice conditions, e.g., lakes, rivers, or shallow waters or seas.

12.7.4 The following is to be contained within the submitted document:

(a) details of ice conditions assumed;
(b) operational scenarios for hull and propulsion unit;
(c) criticality matrix for hull and propulsion unit scenarios;
(d) supporting load and operational data for the criticality matrix;
(e) description of propulsion unit and/or hull loading areas with reasons for selection;
(f) proposed strengthening standards for each load area;
(g) arrangement of propulsion devices;
(h) derived load data based full scale measurement or other predictive means; and
(j) details of, and justification for, deviation from the Rule philosophy.

Cross-references

Section numbering in brackets reflects any Section renumbering necessitated by any of the Notices that update the current version of the Rules for Ships.

Part 3, Chapter 11

2.5.1	Fig 11.2.1 *now reads* Fig. 11.2.3
2.10.2	Fig. 11.2.3 *now reads* Fig. 11.2.5
2.14.1	Fig. 11.2.2 *now reads* Fig. 11.2.4
2.16.1	Fig. 11.2.5 *now reads* Fig. 11.2.7
Table 11.2.10	Fig. 11.2.6 *now reads* Fig. 11.2.8 *(twice)*
Table 11.2.11	Fig. 11.2.7 *now reads* Fig. 11.2.9 *(twice)*

Part 3, Chapter 12

2.3.9	Pt 6, Ch 2,11.5.2 *now reads* Pt 6, Ch 2,12.5.2

Part 5, Chapter 21

1.2.4 (1.2.5)	1.5.3 *now reads* 1.5.4

Part 8, Chapter 2

10.9.2	Table 2.10.4 *now reads* Table 2.10.5
10.16.2	Table 2.10.5 *now reads* Table 2.10.6
10.17.3	Table 2.10.6 *now reads* Table 2.10.7
10.17.4	Table 2.10.7 to Table 2.10.9 *now reads* Table 2.10.8 to Table 2.10.10
10.17.5	Table 2.10.10 *now reads* Table 2.10.11
10.22.1	Table 2.10.11 *now reads* Table 2.10.12

© Lloyd’s Register Group Limited 2012
Published by Lloyd’s Register
Registered office
71 Fenchurch Street, London, EC3M 4BS
United Kingdom